
Model 335 Projector

Supplement to Series 300 Operator's and Service Manuals



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The Series 300 Projector Warranty provisions are provided in a separate document.

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General Information

The Series 300 Operator's Manual and Service Manual provide information on installation, checkout and maintenance for all Series 300 projectors including the Model 335. There are some distinct areas with reference to the Model 335, mainly due to the larger Xenon Arc Lamp, that require additional information and procedures. Focusing on these distinct areas and special procedures is the purpose of this supplement.

The areas discussed in this supplement are:

1.0 Safety precautions: Any necessary safety precautions that are characteristic to the Model 335 Projector that were not referred to in the Series 300 Operator's Manual or Service Manual.

2.0 External Arc Lamp Power Supply: Provides the additional power required for the larger 2500 watt Xenon Arc Lamp.

NOTE: Model 335 Projectors with serial numbers 351100 or higher will not require an external power supply. The additional current required by the larger arc lamp is supplied by the system power supply itself. Refer to the Series 300 Service Manual.

3.0 Brightness Level Checks: Additional procedures required for adjustments that may be necessary on the arc lamp and external power supply if low brightness levels are encountered.

4.0 Electronics Module Removal and Replacement: A separate procedure is included for the Model 335 for the removal and replacement of the Electronics module.

5.0 Lamphouse and Ignitor Removal and Replacement: A separate procedure is included for the Model 335 for the removal and replacement of the Lamphouse Assembly or Ignitor Assembly.

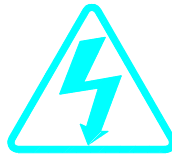
1.0 Safety Precautions

All safety precautions mentioned in the Series 300 Operator's Manual are applicable and should be reviewed prior to operating or adjusting the Model 335.



WARNING!!!

The Squirrel Cage (see BLOWER in Figure 1) Blower located next to the Xenon Arc Lamp Assembly is not covered by a grill. Use extreme caution near this blower when performing any adjustments or maintenance that require the projector cover to be off with power on.



WARNING!!!

High voltage exists on the Ignitor Board Assembly at the front, left of the projector. Be careful when reaching over this area when the Arc Lamp is operating. Wear proper safety clothing to avoid shock hazard. Also wear safety goggles to protect your eyes from Ultraviolet and Infrared exposure.



CAUTION!!!

To avoid possible overheating, be sure to allow at least six inches of clearance on both sides of the External Arc Lamp Power Supply.

2.0 External Arc Lamp Power Supply

NOTE: This section applies only to those Model 335 projectors that use the external power supply. Projectors with serial numbers 351100 or higher do not require the external power supply. Refer to the Series 300 Service Manual for these units.

CAUTION!!!

The external power supply can be placed on its side in the upright position or laid flat on its back surface. Working with this power supply in the upright position is a personal safety hazard. The power supply can tip over and cause physical injury to anyone nearby. For this reason, **the power supply should always be on its FLAT SURFACE, not on its side!**

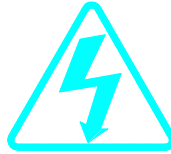
The External Arc Lamp Power Supply provides the additional power necessary to operate the larger 2500 watt Xenon Arc Lamp that is used in the Model 335 Projector. The External Arc Lamp Power Supply and all required cables are shipped with the Model 335 Projector. The external power supply operates from a 200-240 VAC, 30 amp, 50/60 Hz source and can be used with a single or three phase power source.

Power is applied to the unit by a circuit breaker located on one side next to a 16 amp, 600 volt fuse that protects the power supply. Another circuit breaker (on another side of the power supply) applies power to the Xenon Arc Lamp in the projector. Two access openings (covered by plastic caps about an inch in diameter) are located on the top of the power supply near the nameplate. The cap furthest from the nameplate can be removed to access the Current Adjust Pot, whenever it is necessary to increase the Xenon Lamp current (see the procedure shown below under "Brightness Level Checks"). The other access opening is not used.

The smaller power cord, that plugs into the side of the External Arc Lamp Power Supply, supplies all the voltages for the projector electronics. The larger cable, that plugs into the connector at the rear of the projector, provides the power for the 2500 watt Xenon Arc Lamp.

The installation and operation of the External Arc Lamp Power Supply consists only of connecting the two power cables to the power source and the projector and activating both circuit breakers to the ON position. The red lamp near the large circuit breaker will light to indicate power on.

Very little maintenance is required on the External Arc Lamp Power Supply. The ventilation inlet and outlet grills should be cleaned on a regular basis to insure good air flow. The blower motors are permanently lubricated.



CAUTION!!!

If the 16 amp, 600 volt fuse becomes defective and must be replaced, use an exact replacement and, to avoid possible electric shock, wait at least 15 minutes after turning power off (for discharging) before replacing the fuse.

CAUTION!!!



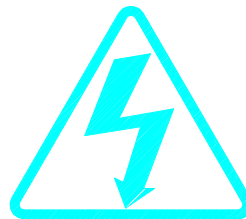
ALLOW ADEQUATE CLEARANCE!

The fan inside the External Arc Lamp Power Supply helps keep the unit cool. Be sure to allow at least six inches of clearance on both sides to prevent overheating of the unit.

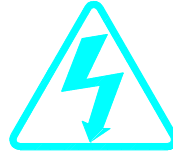
3.0 Brightness Level Checks

If the projector has a low brightness level the items below should be checked and adjusted, if necessary:

WARNING!!!

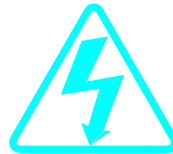


The following procedures require the removal of the projector covers and should be performed by Hughes-JVC Certified Maintenance Technicians only. Prior to removing covers, review the chapter on Safety in the Series 300 Service Manual and the Safety information in this supplement.



WARNING!!!

The Squirrel Cage blower (see *Figure 1*), next to the Arc Lamp Assembly, is not covered by a grill. Use extreme caution near this blower when performing any adjustments or maintenance that require the projector cover to be removed with power on.



WARNING!!! High voltage exists on the Ignitor Board Assembly at the front, left of the projector. Be careful when reaching over this area when the Arc Lamp is operating. Wear proper safety clothing to avoid shock hazard. Also wear safety goggles to protect your eyes from Ultraviolet and Infrared exposure.

1. The Xenon Arc Lamp may have moved within the reflector. To check this, look at the anode shadow on the blue dichroic mirror (the blue dichroic mirror is the first mirror after the condensing lens). Verify that the anode shadow (small, dark oval inside the light circle) is a uniform oval that is no more than 1/2 inch or no less than 1/4 inch in diameter. If the oval looks non-uniform or has a flare coming from one side, adjust the X-Y plates on the back of the lamphouse (see *Figure 1*). Use a standard Phillips screwdriver and loosen the two top screws on the pivot holes and slide the plates on their pivots until the shadow looks uniform. While viewing Test Pattern 6 (Static Flat Field) the uniformity on the screen should become more centered also.

2. Adjust the Z-axis of the Xenon Arc Lamp. (This procedure will probably be required if the lamp has been in use for a long time.) Use a 9/64 inch hexhead balldriver and rotate the screwhead located on the black ball on the rear of the lamphouse (see *Figure 1*). Only a turn or two should be required. Observe the screen or use a light meter to verify proper brightness (refer to step 8 below for details on how to measure the screen brightness). Be sure to maintain proper Roll-Off (refer to **NOTE ON ROLL-OFF** below Step 3).

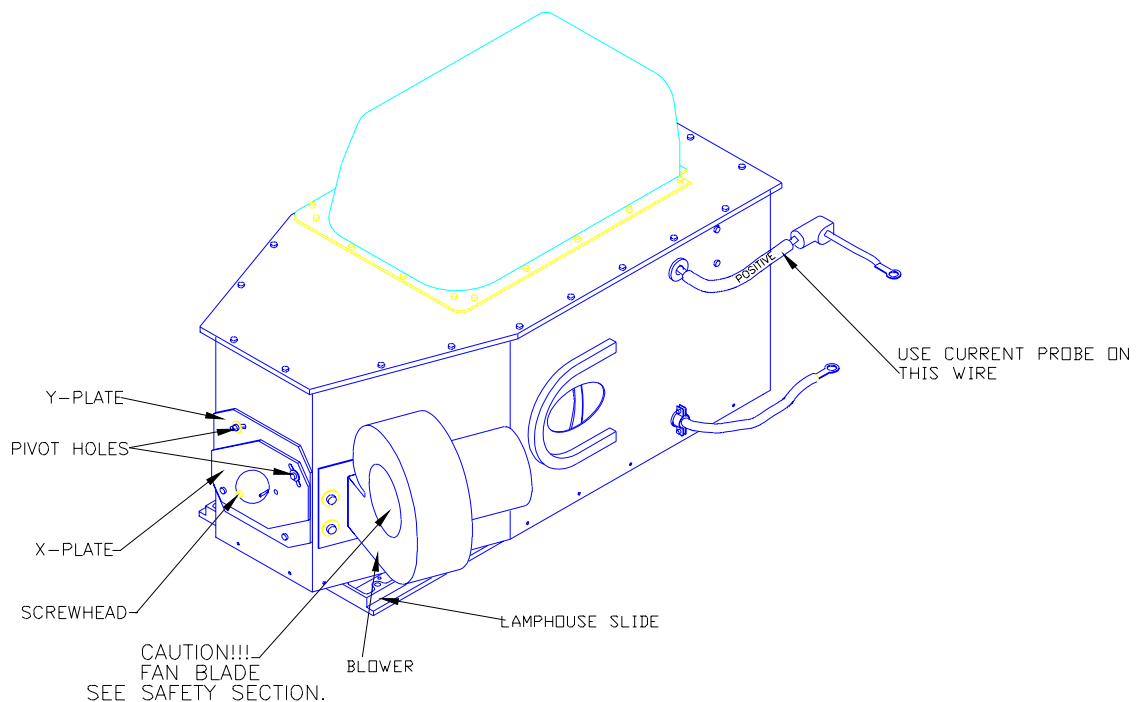
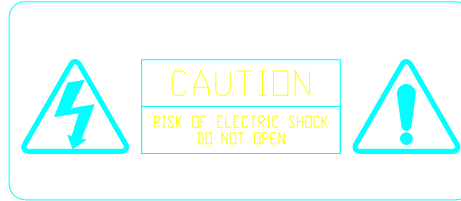


Figure 1. Model 335 Xenon Arc Lamp Housing Assembly (Lamphouse)

3. Verify that the condensing (collimating) lens assembly has not moved (see Figure 2-2 in the Series 300 Operator's Manual). Check to see if the assembly is loose. It should be unmovable in any direction. The barrel of the lens assembly should be no more than 1 1/2 inches (usually much closer) from the blue dichroic mirror. If it needs to be moved closer, first loosen the 3mm set screw located at the top of the mounting ring that the barrel sets in, then move the lens closer to the blue dichroic mirror. This will increase the center brightness but the roll-off may not be acceptable if the barrel is moved too far forward. **Roll-off** is the gradual difference in brightness on the screen from the center to the edges.

NOTE ON ROLL-OFF: In these illumination optics (arc lamp and condensing lens) adjustments, be careful to maintain proper roll-off. It is possible to get very high brightness values at the screen center at the expense of proper roll-off. Try to keep the ratio between center brightness and edge brightness at no more than 2:1 (e.g. if the center brightness is 20 foot-candles, the edge brightness should be at least 10 foot-candles). Use a light meter to determine if the roll-off is appropriate.



WARNING!!!

High voltages exist inside the External Arc Lamp Power Supply. Remove only the small plastic access cover to adjust the lamp current when necessary. **No other** access covers or panels should be removed by anyone other than an authorized Strong International dealer. There are no user serviceable components in this unit.

4. Verify that the power supply current is set high enough. The current to the lamp is factory-set at 90 amps. Use a current probe (similar to Amprobe Model AC/DC 1000) to check the current on the positive wire going into the Xenon Arc Lamp housing (see Figure 1). Clamp the probe (**CAUTION! Do not have the current probe around the wire when the projector is being powered up or damage to the probe will result**) around the positive wire—the positive wire will provide a more accurate reading. If this value is low, increase it (see **CAUTION** below) with the current adjust pot on the External Arc Lamp Power Supply or the System Power Supply (refer to the NOTES in Section 4.4.B and 4.5 and Figure 4-4 in the Series 300 Service Manual). This adjustment screw is located under a plastic protective cover about an inch in diameter on the top of the External Arc Lamp Power Supply (under the cap furthest from the nameplate). Be sure to maintain proper Roll-Off (refer to **NOTE ON ROLL-OFF** below Step 3).



CAUTION!!!

Make adjustments in very small increments to insure lamp integrity (lamp overheating could occur if current is abruptly increased). Do not increase the external power supply current beyond 100 amps or damage to the equipment could occur.

5. Whenever the Sensitivity Offsets are reset it affects the brightness level. Refer to the Series 300 Operator's Manual, Section 4.12, for information on how to correctly set the Sensitivity Offsets.

6. If none of the previous procedures cure the problem of low brightness, it may be time to replace the Xenon Arc Lamp. Low brightness could be caused by a lamp with over 1200 hours of use or one that has been turned on and off many times. If either of these is the case, the Lamphouse Assembly must be returned to be relamped. **Do not remove the Xenon Arc Lamp from the lamphouse**-return the entire unit.

7. Verify that the cold mirror, condensing lens, and UV filter are all free from stains and cracks.

8. The Model 335 should always be able to achieve a minimum of 3000 lumens of brightness level. Use a light meter, after the above adjustments are completed, to measure the foot-candles of light output at the screen and multiply this number by the area of the screen in square feet. As an example, if the screen area is 15 x 20 =300 square feet and the light output on the light meter measures 11 foot-candles, the brightness level in lumens equals 300 x 11=3300 lumens.

4.0 Electronics Module Removal and Replacement

The Electronics Module is the entire assembly to the rear of the Arc Lamp and optics assemblies. It consists of the System Power Supply, High Voltage Power Supply, Main PCB Card Cage, and CRT Housing Assembly. Refer to Figure 2-2 in the Series 300 Operator's Manual (the CRT Housing Assembly is next to the High Voltage Power Supply and is not shown in Figure 2-2).

To remove and replace the Electronics Module:

1. Unplug the projector.
2. Free the power cord from the electronics module by removing the cable clamp(s) on the right side base of the electronics module.
3. On the left side of the card cage, detach the power supply jumper cable from P/J81.
4. At the rear of the projector, remove the three fan housing screws (located under the rear lip of the projector baseplate) and remove the fan housing. Carefully, loosen and move the attached wires aside.
5. On the left side of the card cage, unplug connectors P82 and P83 from the back plane and move the wiring harness out of the way (separate these wires from others to free them if necessary).

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6. On the right side of the System Power Supply, at the input power terminal block, mark and detach the three wires supplying power to the arc lamp housing's squirrel cage blower. (Be sure to label the three wires carefully so they can be reconnected correctly.) Move that cable out of the way.
 7. Back all CRTs into the CRT assembly by turning the focus rod screws, at the rear of the CRT assembly (see Figure 6-4 in the Series 300 Operator's Manual) all the way to the stops. Be careful not to jam the focus rod screws by turning them too tightly into their stops.
 8. At the base of the electronics module remove the hex screw at each corner (four screws).
 9. Make sure that all control and input cables are disconnected from the back of the card cage, then tilt the card cage back.
 10. Remove the two hex screws in the base of the electronics module under the card cage.
 11. Tilt the card cage forward.
 12. Remove the electronics module (two people) by grasping the handles at the rear and the lip under the system power supply in the front. **When removing, be careful not to bump the CRT cooling bellows (see Figure 4-8 in the Service Manual). The bellows will not be covered under warranty if damaged in this procedure!** The easiest way to remove the module is to tip the entire electronics module back until the System Power Supply clears the arc lamp housing, then lift the module up and back.
 13. Replace the module in the reverse order. When replacing the module, make sure that the module base plate is tight against the two front alignment pins and the one left-side alignment pin prior to tightening the hex screws.
 14. After the module is replaced, perform a CRT mechanical focus adjustment, as shown in Section 6.8 of the Series 300 Operator's Manual.

5.0 Lamphouse/Ignitor Removal and Replacement

5.1 Lamphouse

The Xenon Arc Lamp Lamphouse must be removed as a complete unit. **Do not remove the arc lamp separately!**

To remove the Xenon Arc Lamp Lamphouse:

1. Turn power off and unplug the projector. **Do not attempt to remove or replace the Lamphouse without first removing power by turning power off with the remote (or PC terminal) and the circuit breaker on the side of the System Power Supply and unplugging the projector from the AC wall outlet.**
2. Disconnect the high voltage leads from the Ignitor (the two wires shown at the right in Figure 1). **NOTE: DO NOT REMOVE THE CABLES FROM THE ARC LAMP-LEAVE BOTH CABLES ATTACHED TO PREVENT MISALIGNING THE ARC LAMP INTERIOR COMPONENTS.**
3. Disconnect the fan connector on the left side of the Lamphouse.
4. Disconnect the squirrel cage blower connector on the right side of the Lamphouse.
5. Remove the two hex bolts on the right rear of the Lamphouse slide.
6. Carefully slide the Lamphouse out from the right side of the projector.

Replace the Lamphouse in the reverse order.

5.2 Ignitor

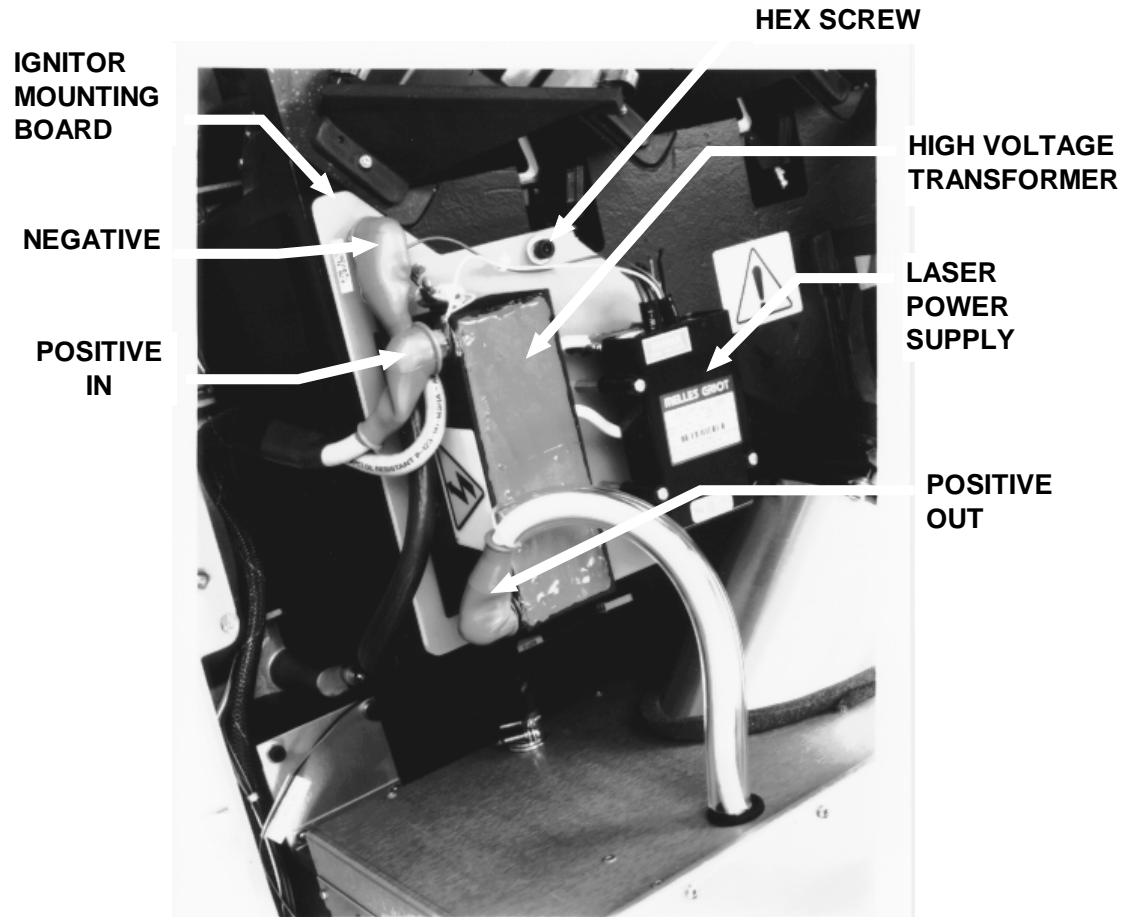


Figure 2. Ignitor Assembly.

The Ignitor Assembly consists of a Laser Power Supply, a High Voltage Transformer and the associated wiring.

To remove the Ignitor Assembly:

1. Turn power off and unplug the projector.
2. Remove the front and rear covers.
3. Clearly label and remove the four (4) cables connected to the Ignitor Assembly.
4. Remove the three (3) hex screws that attach the Ignitor Mounting Board to the projector. **NOTE:** The larger washer **must** be replaced to the hex screw at the left, front of the Ignitor Mounting Board to allow space for the other component that is connected there.

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5. Carefully remove the Ignitor Assembly, being cautious not to lose the spacers that are under the board holes. When replacing the Ignitor Assembly, it will be easier to keep the spacers stationary by placing a small amount of super glue under them prior to replacing the Ignitor Mounting Board.

Replace the Ignitor Assembly in reverse order. When replacing the cables, make sure the negative cables go on first and that the positive cable to the front of the Ignitor Assembly is placed “over” them-otherwise the point where they cross over each other will get in the way of the fan when the front cover is replaced.

